E. JAGENBERG.

STRIP FEEDING DEVICE FOR BOX MACHINES.

APPLICATION FILED DEC. 31, 1912.

1,125,330.

Patented Jan. 19, 1915.

2 SHEETS—SHEET 1.

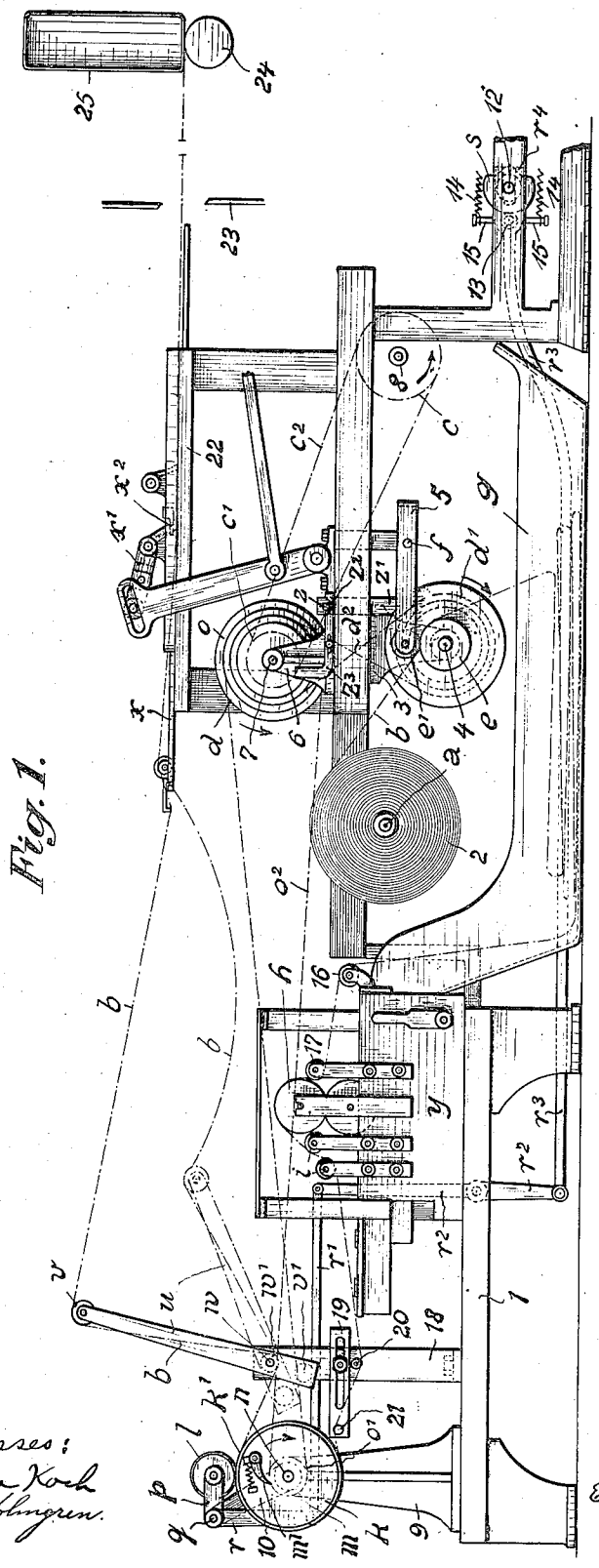


Fig. 1.

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Daniel Holmgren.

Inventor:
Emil Jagenberg
by his attorneys.
Brisen & Jungé

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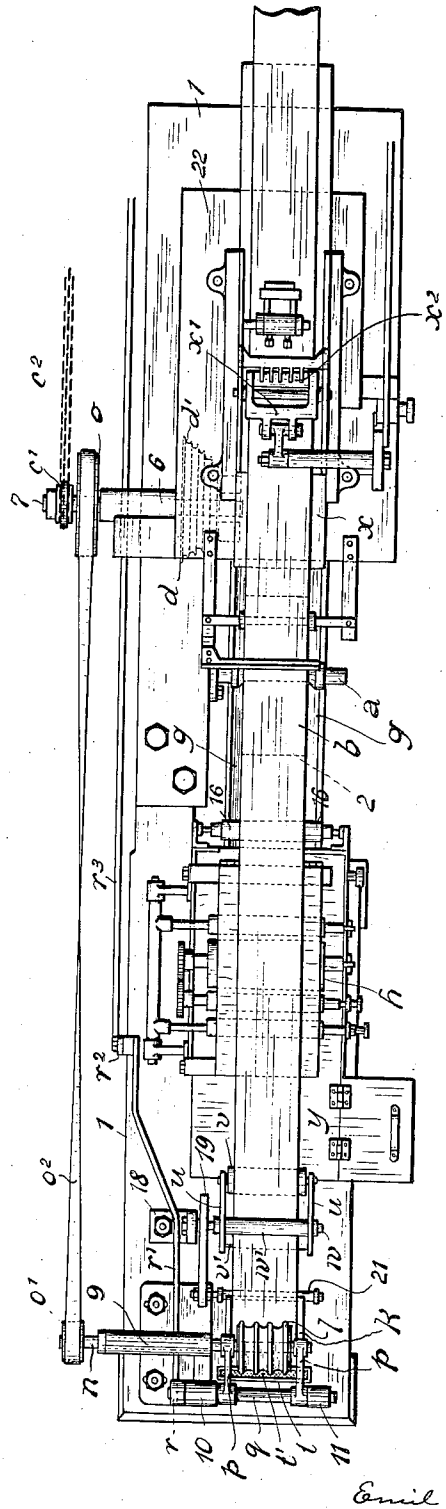


Fig. 2.

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UNITED STATES PATENT OFFICE.

EMIL JAGENBERG, OF DUSSELDORF, GERMANY.

STRIP-FEEDING DEVICE FOR BOX-MACHINES.

1,125,330. Specification of Letters Patent. Patented Jan. 19, 1915.

Application filed December 31, 1912. Serial No. 739,524.

To all whom it may concern:

Be it known that I, EMIL JAGENBERG, a citizen of the Empire of Germany, residing at Dusseldorf, in the Empire of Germany, have invented a new and useful Strip-Feeding Device for Box-Machines, of which the following is a specification.

My invention relates to strip feeding devices for box-machines of the class, in which the strip passing from the paper roll between a pair of pressing rolls is first plaited in several layers in a trough, then passed from the trough over a gumming device around a driving drum, next intermittently drawn by means of a gripping device to the box blank and wound around the same after it has been cut before the box blank. When making large boxes such feeding devices present the defect, that owing to the great stroke of the gripping device such a considerable pull is suddenly produced in the gummed strip, that the latter frequently breaks.

My invention consists in improvements in such strip feeding devices, whereby the said defect is avoided.

One improvement consists in disposing the upper roll in the pair of pressing rolls in the free ends of a pair of horizontal levers rocking in the frame and in providing means for raising at will the pair of horizontal levers and thus lifting the upper roll off from the lower roll, whereby the feed of the strip is stopped.

Another improvement consists in disposing the driving drum loosely on its shaft and in providing it with a spring-pressed pawl engaging a ratchet wheel fastened on the shaft, so that the drum is permitted to freely turn in one direction while following the pull of the strip.

A third improvement consists in disposing above the driving drum a furrowed pressing roll adapted to roll on the gummed face of the strip and to turn with its pins in the free ends of a pair of operating levers rocking in the machine frame and in providing means for periodically rocking this pair of operating levers so as to press the furrowed pressing roll on the driving drum and to lift it off from the same. Means are provided for sweeping the rims of the furrowed pressing roll so as to remove the adhesive material and to protect the strip from sticking to the furrowed roll.

A fourth improvement consists in providing between the driving drum and the gripping device a pair of yielding levers with two guiding rollers, of which one surrounding the axis receives the gummed strip from the driving drum and the other guiding roller at the free ends of the yielding levers delivers the strip up to the gripping device. A weight or spring tends to erect the yielding levers for tightening the strip, while these levers are adapted to yield to any excessive pull in the strip by turning downward.

I will now proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is an elevation of the improved strip feeding device for box-machines, and Fig. 2 is a plan view of the same.

Similar characters of reference refer to similar parts in both views.

In Figs. 1 and 2 only a part 1 of the frame of the box-machine is shown, which part 1 leaves space for a trough g below. The frame part 1 carries a pin a, on which a paper strip roll 2 can be mounted in any known manner. A hanger 3 on the frame part 1 carries a shaft 4, which is therein mounted to turn and has fastened on it a pressing roll e at the front and a step-pulley d^1 at the rear. On a pin f carried by the frame part 1 a pair of horizontal levers 5 is made to rock, which at the free end carries a pressing roll e^1 adapted to bear under the pressure of its own weight and that of the levers 5 from above against the pressing roll e. The two levers 5 are rigidly connected with two vertical arms z^1, which pass through suitable openings in the frame part 1 upward and carry above a cross pin z. A bolt z^3 suitably guided on the frame part 1 passes under the cross pin z and has a recess z^2, in which the pin z can engage. When the cross pin z engages in the recess z^2 the upper pressing roll e^1 is permitted to freely bear on the lower pressing roll e, but when the bolt z^3 by means of its upright arm seized with the hand is shifted to the right, the cross pin z will move out of the recess z^2 and ride over the upper face of the bolt z^3, so that thereby the upper pressing roll e^1 is lifted off from the lower pressing roll e. In a support 6 on the frame part 1 a shaft 7 is mounted to turn, which carries a step-pulley d at the front and a chain wheel c^1, also a pulley o at the rear. The step-pulley d is shown as connected with the lower step-pulley d^1 by means of a crossed lace d^2 or

the like and the chain wheel c^1 is shown as connected by means of an endless chain c^2 with another chain wheel c (Fig. 1) on a shaft 8, which is driven from the box-machine in any known manner. Of course the endless chain c^2 may be replaced by its equivalent, such as an endless belt or the like. In another support 9 on the frame part 1 on the left a shaft n is mounted to turn, which has loose on it a driving drum k at the front and fastened a ratchet wheel m at the front side of the drum k and a pulley o^1 at the rear. As the pulley o^1 is connected by means of a crossed belt o^2 with the above mentioned pulley o, it will be seen, that the shaft 8 by means of the two chain wheels c c^1 and the endless chain c^2 drives the shaft 7, which in turn by means of the two step-pulleys d d^1 and the crossed lace d^2 drives the shaft 4 with the lower pressing roll e and by means of the two pulleys o and o^1 and the crossed belt o^2 drives the shaft n with the ratchet wheel m. The direction of revolution of the shafts 8, 7, 4, n are indicated by the arrows shown in Fig. 1. As the driving drum k carries a spring-pressed pawl m^1 engaging in the ratchet wheel m, it will be seen that the drum k is normally taken along by the shaft n. In an arm 10 of the support 9 and in another support 11 (omitted from Fig. 1) a shaft q is mounted to rock, which has fastened on it two horizontal arms p p at the front and a pendent arm r at the rear. The two arms p p carry a furrowed pressing roll l which is adapted to bear from above against the driving drum k. The two arms p p are preferably provided with a cross holder t carrying a wetted felt strip t^1 or the like, which is adapted to sweep the rims of the furrowed roll l. Preferably the driving drum k is provided with a cover k^1 of india rubber or the like. The pendent arm r is pivotally connected by means of a rod r^1 with the upper arm of a lever r^2 rocking on the frame part 1. The lower arm of the lever r^2 is pivotally connected with a rod r^3, which is cranked in its right part and terminates in a fork r^4 (Fig. 1) that is guided by a shaft 12 driven from the box-machine in any known manner. The shaft 12 carries a cam disk s against the periphery of which a roller 13 on the rod r^3 is constantly pressed by means of two helical springs 14, 14 connecting two opposite arms 15, 15 of the rod r^3 with the frame part 1 in any known manner (not shown). As long as the roller 13 rolls on the concentric portion of the cam disk s the furrowed pressing roll l is to be lifted off from the driving drum k, but when the roller 13 engages in a recess of the cam disk s the two helical springs 14, 14 are to press the furrowed pressing roll l on the driving drum k.

Between the trough g and the driving drum k a gumming device y is disposed, the construction of which I do not specifically describe here, as it is immaterial to my invention. The gumming device y comprises a gumming roll h, two guiding rollers 16, 17 on the right and two guiding rollers i i on the left. Between the gumming device y and the driving drum k a support 18 is fastened on the frame part 1 and carries a pin w above and an adjustable plate 19 below. The adjustable plate 19 carries two guiding rollers 20, 21 for the strip. On the pin w two yielding levers u u of a compensating looper are made to rock, which at their lower ends are connected together by means of a weight v^1 or the like and carry in their upper ends a guiding roller v. Another guiding roller w^1 is disposed on the pin w. On the frame part 1 is disposed a table 22 with a guiding table x, over which latter a feeder x^1 and a gripper x^2 move. 23 denotes a cutting device, 24 a driving roller of the winding device and 25 a box blank around which the strip b is to be wound. I do not describe here the gripping device x, x^1, x^2 nor the cutting device 23, or the winding device 24, as all of them are known and form no part of my invention.

The strip feeding device described operates as follows: When the box-machine is started and by shifting the bolt z^3 to the left the upper pressing roll e^1 is released, so that it bears on the lower pressing roll e, the latter during its motion in the direction of the arrow will draw the strip b from the roll 2 and the strip b will be plaited down on the bottom of the trough g in several layers, as is indicated by the dotted lines in Fig. 1. As the strip b passes from the trough g over the guiding roller 16, under the guiding roller 17, over the gumming roller h, also over and under the two guiding rollers i i and 20, 21 respectively, next around the driving drum k, under the lower guiding roller w^1 and over the upper guiding roller v to the gripping device x x^1 x^2 as indicated by the dotted lines, it will be understood, that each time that under the action of the cam disk s the furrowed pressing roll l is pressed downward on the driving drum k the latter will draw the strip b out of the trough g over the gumming device y, so that the gripping device x x^1, x^2 can seize the strip b and draw it to the right through the opened cutting device 23, while the box blank 25 working with the driving roller 24 in the known manner seizes the end of the strip b and winds it on. As long as no pull prevails in the strip b, the weight v^1 or the like will hold the pair of yielding levers u u in their erect position shown in full lines in Fig. 1, but when during the stroke of the gripping device x x^1, x^2 from left to right a great pull is suddenly produced in the

gummed strip *b* the pull will turn the yielding levers *u u* downward, say into the position indicated by the dotted lines and turn the driving drum *k* more rapidly in the direction of the arrow, the furrowed pressing roll *l* having been previously lifted off the driving drum *k*, so that the drum displaces itself relatively to the shaft *n* and its pawl m^1 rides over the backs of the teeth of the ratchet wheel *m*, while the strip *b* can be easily drawn by the driving drum *k* out of the trough *g* over the gumming device *y* without breaking. The india rubber cover k^1 of the driving drum *k* greatly increases the friction between the strip *b* and the periphery of the drum, whereby the irregular motion of the strip is considerably facilitated. When the pull in the strip *b* again ceases and the strip hangs down as indicated by the curved dotted line in Fig. 1, the weight v^1 or the like will return the pair of yielding levers *u u* into their erect position, so that the strip *b* is again tightened. After a sufficient length of the strip has passed through the opened cutting device 23, the latter is operated for cutting the strip as usual.

The strip feeding device described can be varied in many respects without departing from the spirit of my invention.

I claim:

In a device of the class described for box-machines, a frame, a drum in said frame adapted to guide a strip, means on said frame adapted to intermittently feed forward the strip through a length whereby a great pull is periodically produced in the strip, a pair of levers rocking on said frame and carrying a strip-guide at their free end, and means tending to erect said pair of levers for tightening the strip whereby the pair of levers is enabled to yield to the varying pull in the strip.

EMIL JAGENBERG. [L. S.]

Witnesses:
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